TAC Meeting – May 12, 2008
Announcements from the Chair

Welcome to the May meeting of the Wastewater Technical Advisory Committee.

On our agenda this evening we have two technical memorandums to review. The first on our agenda is titled 'Effluent Reuse and Disposal Alternatives, the second will be 'Partially Mixed Facultative Pond Options'. As we did at our last meeting, each item will be introduced by the Project Team then discussed by the TAC prior to taking public comment.

We understand that the issue of effluent reuse is extremely important to the community, especially considering our Level III water severity condition. However, it is also important to understand the practical limits and costs associated with the treatment and disposal of the effluent. In order to deliver the effluent for reuse to users in the prohibition zone, it requires higher levels of treatment (the higher the level, the greater the cost). To accomplish this, the project needs to rely on the active participation of the three water purveyors in Los Osos. Please keep this in mind if you are going to speak in public comment.

The TMs that we discuss are responses by the Project Team to information requests or questions raised by the independent EIR Team. Our task is to review, question, and comment on the content of these TMs, especially as it pertains to the effects we believe it might have on Los Osos.

Those of you who might wish to comment during the public comment period should restrict your comments to the contents of the tech memo. If you believe that there is an alternative solution to the topic under discussion you should submit that information directly to the Project Team at LOWWP@co.slo.ca.us. In order for us to get through our agenda and adjourn by 9:30, I need to ask you to abide by these rules.

I would like to remind everyone listening to us this evening that included in the calculations for designing our wastewater project is a drop in current per family water usage. Although the Board of Supervisors passed ordinances designed to retrofit plumbing fixtures in the community, no programs will be effective enough without voluntary water conservation measures taken by individuals. We can immediately have an effect on our groundwater basin by flushing toilets less frequently, monitoring our use of showers, and, for relatively low cost, install a hot water recirculation system. Also teach your children water conservation.

A reminder that the TAC reports on the TMs discussed in our April meeting have been submitted to the EIR Team and are published on the website.

The next meeting of the TAC will be held on Monday, June 9th.

Before we start our agenda, I would like to ask the project team to update the community on the progress of the draft EIR.

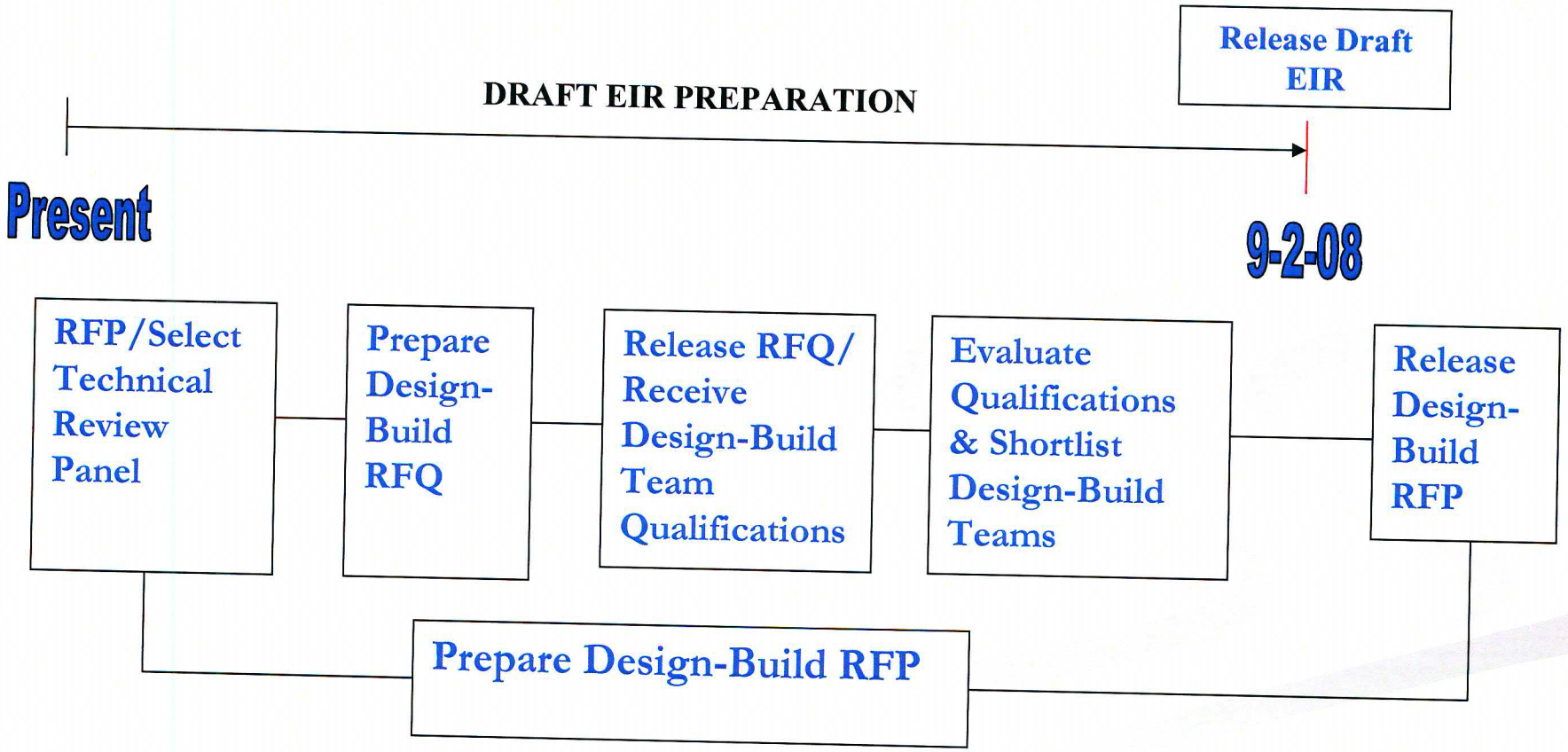
FROM: JOHN WADDELL

Los Osos Wastewater Project

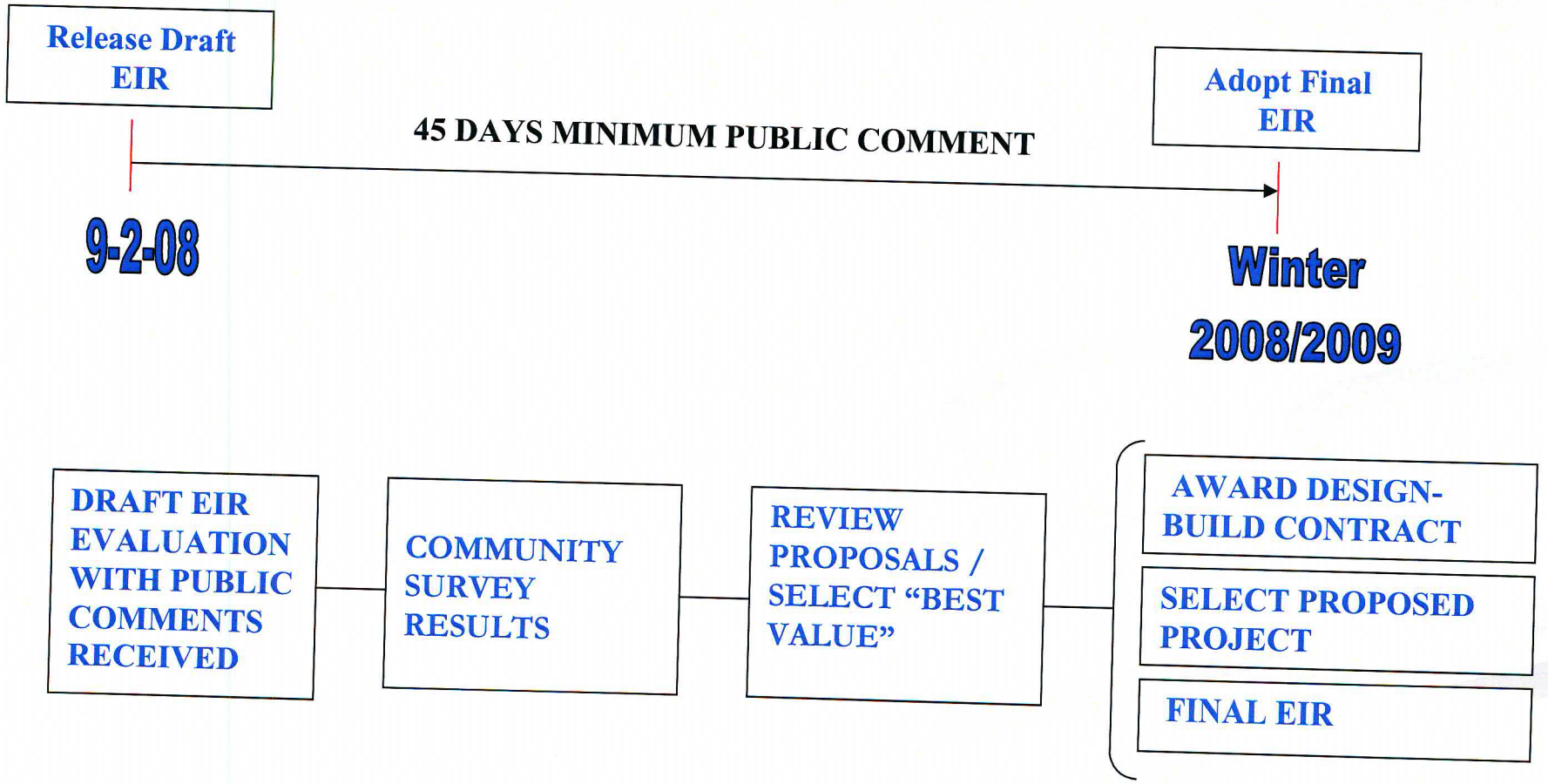
Technical Advisory Committee

May 12, 2008

Design-Build Strategy and Approach
(Draft EIR Preparation Phase)



Design-Build Strategy and Approach
(Final EIR Phase)



From: GAIL McPHERSON

CITIZENS FOR CLEAN WATER

PROHIBITION ZONE LEGAL DEFENSE FUND

DEDICATED TO CLEAN WATER, REGULATORY COMPLIANCE AND PROTECTION OF PROPERTY RIGHTS

San Luis Obispo County Wastewater Project Development
TECHNICAL Memorandum
Effluent Reuse and Disposal Alternatives
Final Draft April 2008

Response comments from: Citizens for Clean water' intent is to put into the record for the county project consultants, as well as EIR consultant (MBA) that the technical memorandums, including this TM, require detailed third party review and validation to avoid compromising the legitimacy of the process and the project.
The issues raised are limited, however I reserve the opportunity to add to comments in the future.

Seawater Intrusion Mitigation: The background in section 2.0 states that the existing discharges from residential septic tanks currently provide mitigation for sea water intrusion on the order of 90 AFY. Collection of the wastewater flows will increase the sea water intrusion problem from 460 to 550 AFY , unless mitigated.

The threat of seawater intrusion and sustainability of the community's water supply is the impetus for the reuse and disposal alternatives, and the comparison of alternatives based on potential for mitigation of seawater is a principle benefit of the wastewater project.

This report is absent of the benefits put forth in the Ripley Pacific plan with a agriculture reuse/disposal option that provided for storage and handled 100% of the flows. The true representation of an in Lieu or true Ag exchange program provides the benefits of full effluent handling with cost savings on treatment(Reference Ripley pacific project update ex summary pg 9)
Other important factors to consider is that the disposal option for Broderson is likely over stated with the cost of $6 million to handle just a portion(40,000 gpd) of capacity. However, the charts in Figures 9 and 10 misrepresent the flows to Broderson at 700,000 gal per day during wet weather. Residential leach field testing was used.(criteria is discussed further in comments.)

The Tri-W project included leachfields at the Broderson site, and they seem to be forced back into the options and their possible benefits exaggerated. In the original plan used additional sites on the east side of town as the only reuse/disposal alternative. The sum of the capacity for disposal by the sites in the Tri-W project did not meet the required

capacity for buildout flow. The shortfall in capacity was deferred to a future project to solve.

Because of this project element flaw, the fine screening repeated the coastal commission findings that Broderson represented deferred project elements, both for treatment and for capacity, since harvest wells/blending stations was not included or treatment capacity for the nitrates retained in the harvest water. Note the statements in the NWRI review of the Ripley Pacific project report (pg 6 3.5.3):

> (and referenced in p2-2 of fine screen) 3.5.3 "If the Broderson site is used for effluent disposal, it is important to evaluate compliance with the new DHS Groundwater Recharge Reuse criteria (because there is no vadose zone and there would be intentional recharge to the upper aquifer, which has historically been used for potable supply).

The TM provides an incomplete analysis of true Ag. Exchange program. . The TM report(pg 2 2.1) states that mitigation from the wastewater project alone provides a mitigation level 2, which is equal to 190 to 240 AFY. Broderson receives a mitigation factor of 0.22. The Cleath report indicates that 448 AFY is current level of "septic returns on west side" and Broderson is also 448 AFY, then MF for Broderson is actually 0.0---- since it all goes down gradient to the bay front. To avoid the need for harvest wells, a rate of 448 AFY is recommended, which does not exceed the current level of septic returns on the west side, and therefore would not adversely impact existing shallow water conditions along the bay front.

Why use Broderson?:

The history of the project and the efforts to date support claims that the design criteria developed for the Broderson site was erroneously applied in order to "reverse engineer" an already purchased via partial water board grant, a capacity limited disposal field. Why use Broderson at all. Winter storage is a concern, but the cost (over $6 mil) compared to other options is unreasonable.

Regulatory issues are triggered at Broderson, and must be accounted for. Because the TM ignores this, the consequence of another "deferred project" to meet requirements after selection could result. This a risky piece of the 'disposal' plan.

The April Staff report to the Board of Supervisors by the County staff indicated that the water reuse/disposal piece of the project is just 20% of the total cost. The rest of the projects 80% will be subject to Design-Build proposals. However in this case the 20% value could drive up the cost of the largest piece of the cost by failing to explore, validate and justify the 'Best Value' option to meet future sustainability issues.

The contentious history of the Broderson site was the point of challenge for the many claims and arguments for a disposal site that could support and justify the Tri W treatment site based on proximity cost savings. This is no longer relevant.

Reuse/Disposal TM: Note two paragraphs on page 7 (below):

> The leachfield prototype testing, analysis, and design capacity conclusions are presented in a 2004 geotechnical report (Fugro West, 2004). A maximum application rate of 30 gallons per day per square foot (gpd/ft2) of effective infiltration area in the leachfield trenches was recommended, based on an observed ultimate infiltration rate of 180 gpd/ft2 during testing. Using this application rate, a minimum 10-feet spacing between trenches, the requirement for leachfield wet-dry cycles, a 100 percent capacity redundancy, and the dimensional constraints of the Broderson site, the previous project (2001) developed the Broderson leachfield design with an average application rate of closer to 7 gpd/ft2 at full capacity.
>
> The hydraulic loading capacity of the site is presented in a 2000 hydrogeologic study (Cleath & Associates, 2000). The estimated annual hydraulic loading capacity of the Broderson site is 896 AFY, but at that rate would require harvest wells to prevent rising water near the bay front (Cleath & Associates, 2000). To avoid the need for harvest wells, a rate of 448 AFY is recommended, which does not exceed the current level of septic returns on the west side, and therefore would not adversely impact existing shallow water conditions along the bay front.

Claims that the original reports MWH/Fugro referenced the wrong EPA manual to arrive at the 30 gpd/sf should be investigated and explained. The strong evidence that capacity was "reverse engineered" at Broderson to justify the Tri W site based on proximity for discharge. (Coastal Commission de Novo hearing report)

Please review the summary of testing protocol from March 9 2004 MWH Furgo report pg 3-7.
The statement that 30 gpd/sf application rate is only 17% of measured infiltration rate is relevant to designing the soak cycle of rapid infiltration ponds, <u>but not leachfields or infiltrator chambers</u>. Additionally, please review MWH/Fugro which appears to have referenced the wrong EPA manual to arrive at the 30 gpd/sf.

The conflicts in the criteria used for subsurface disposal, based on the water quality requirements (the quality of effluent, rate and volume applied, and the fate of the disposal of sewage effluent) must be reviewed, evaluated, and corrected for this site. Subsurface disposal is not in compliance with the Basin Plan, AB 885, and the criteria relied upon was questioned by the Los Osos Community Services district in 2006 regarding the technical criteria. The letter questioned errors in four questions:
First question:

> Referencing the December 16, 2002 report –*Project Design Criteria Technical Memo, pg 30 indicates that Broderson effluent disposal field has a design*

capacity of 810,000 gal per day (gpd) and dispersal area of 250' x 1,200' or approximately 6.9 acres. What is the assumed application rate for establishing 810,000gpd dispersal capacity?

Second question

References the Fugro report March 9 2004 (Attached pg 6-42) and questions the 30 gpd/sf recommendation for the Broderson site. The cited references are given as EPA 1981 (EPA 625/1-81-013, pages 5-15 to 5-19 located in Chapter 5 entitled "Rapid Infiltration Process Design."(This criteria requires systems using a wet and dry cycles)The question raised by the district is why the critiea for rapid dispersal is used when the site was not designed to be operated as a rapids infiltration disposal site, which has other criteria for soak and dry cycles.
The use of criteria for dispersal application rate determination-contained in EPA 1980 (EPA 625/180-012) and /or EPA 2002 (EPA 625/R-00/008) This was not corrected in the MWH project, and does not appear to be explored, explained or corrected in the current TM. The rates in determining capacity will result in much lower than 30 gpd.

Third question

LOCSD MWH sheet ED-C-330 dated February 16, 2004. with a revision notation of July 2005, by sjh of MWH and indicated a total infiltrative surface rate of 57,000 square feet (119,200 lineal feet by 3 feet wide) assuming half the field is at rest (according to the criteria used)

Fourth question

September 27, 2000 the Governor signed legislation (AB 885) and asks to look at the application of subsurface disposal from this criteria. From the recent Regional water Board hearing, and the revised Basin Plan,

<u>Concerns</u>

1) What is Fugro's 30 gpd/sf for Broderson: protocol for residential septage disposal systems is based on?

2) The Broderson perc. rates (2003): all but one was faster than one minute per inch at Broderson site.

3) The March 2007 AB 885 draft: Note Table 2 and Figure 1. Application rate is either "prohibited" or "zero" if percolation rate is faster than one minute per inch.(Maximum application rate is 1.2 gpd/sf.)

4) The Basin Plan update adopted on May 9, 2008 by the Regional water Board maximum percolation rate is one minute per inch, consistent with EPA manuals, and AB 885.

Conclusion:

The greatest concern is that the TM repackages data and recommendations derived from reports which have been challenged and are not considered reliable. The design criteria has not been scrutinized or corrected, or alternately, justified. The issues of assumed capacity, ignoring cycling rates, regulations for subsurface disposal, DHS issues, and other factors, the application of the 30 gpd/sf is not a legitimate application rate, and is not technically defended.

The criteria used in the TM must be defensible, however the process has not subjected the TM's,(including the TM reuse and disposal) to independent evaluation, as requested several interested parties and by the TAC members.

It is unacceptable to apply such reverse engineering for capacity, to avoid implications of DHS regulations through the term "disposal". It is not applying professional diligence to avoid application of AB 885 and Basin Plan criteria for subsurface disposal.

Further confusion is inserted by inaccurately using the terms: "percolation rate", "application rate", and "infiltration rate" interchangeably. The EPA manuals these terms have very distinct and different meanings, but Fugro/MWH/Carollo/Wallace et al are using the three terms interchangeably. Broderson was the subject of challenge in the Coastal Commission hearings, the lawsuit by water purveyors, and other funding challenges.

The original design was based on a project site decision that is not longer relevant Please send the TM back to the County engineering consultants to correct and to arrange for independent review, correction or validation and support of findings.

Sincerely,

Gail McPherson
CCW-PZLDF
PO BOX 6095
LOS OSOS CA 9341
805/534-1913

Attachments:

June 30 LOCSD letter to MWH
Furgo March 9, 2004 MWH report page 6-42; 3-7 & 3-8.
March 13, 2007 AB885 OSWTS draft rules

June 30, 2006

Marshal Davert
Vice President, MWH Americas
3321 Power Inn, Road Suite 300
Sacramento, CA 95826

VIA COUNSEL

SUBJECT: EXPLANATION OF APPLICATION RATE FOR THE BRODERSON LEACHFIELDS, LOS OSOS WASTEWATER PROJECT

Dear Mr. Davert:

We are writing this letter to seek clarification and explanation of some technical assumptions used as the basis for your firm's design of the Los Osos Wastewater Project. Staff has been reviewing the design assumptions of the Waste Water System and has questions regarding the design of the disposal system for the Los Osos Wastewater Project.

1. In the MWH December 16, 2002, Los Osos Wastewater Project Design Criteria Technical Memo, page 30 indicates that the Broderson effluent disposal field has a design capacity of 810,000 gallons per day (gpd) and the dispersal area is 250' x 1,200', or approximately 6.9 acres. What was the assumed application rate for establishing the 810,000 gpd dispersal capacity?

2. In the Fugro March 9, 2004 Los Osos Wastewater Project Geotechnical Report, page 6-42, a dispersal application rate of 30 gallons per day per square foot (gpd/sf) is recommended for the Broderson site. The cited reference is EPA 1981 (EPA 625/1-81-013), pages 5-15 to 5-19 located in Chapter 5 entitled "Rapid Infiltration Process Design." What was the rationale for not citing EPA 1980 (EPA 625/1-

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80-012) and/or EPA 2002 (EPA 625/R-00/008) as appropriate reference(s) for dispersal application rate determination?

3. Your attention is directed to LOCSD MWH Sheet ED-C-330 dated February 16, 2004, with a revision notation of July 2005, by SJH of MWH and indicates a total infiltrative surface area of 57,600 square feet (19,200 lineal feet by 3 feet wide). Assuming half of the field is at rest, the application rate calculates to 28.1 gpd/sf (57,600 sf/2 fields = 28,800 sf per active field, 810,000 gpd/28,800 sf = 28.1 gpd/sf). How is this application rate consistent with the application rate assumed in the December 16, 2002 technical memo?

4. On September 27, 2000 the Governor signed legislation (referred to as AB 885) mandating that the State Water Resources Control Board implement statewide standards for on-site wastewater systems including any individual or community system that discharges effluent to the subsurface. Assuming enactment of the current SWRCB AB 885 draft text (dated March 16, 2006) sometime in 2007, would the new code establish the effluent dispersal application rate for the Broderson leachfields? If so, what would that application rate be?

If you have any questions regarding this matter, please contact me at (805)528-9370.

Sincerely,

Daniel M. Bleskey
Interim General Manager

Cc: Board of Directors
Interim General Counsel
Special Counsel, J. Biggs
Special Counsel, S. Onstot
H. Packard, CCRWQB

6.7 EFFLUENT DISPOSAL SYSTEM DESIGN

The EPA (1981) guidelines suggest that infiltration rates for effluent disposal basins should not exceed approximately 10 to 15 percent of the measured field infiltration rates. As a basis for recommending suitable application rates for the design of the effluent system, we have recommended allowable application rates for the design of percolation lines and drywells based on 1/6 of the estimated infiltration rate of the soil estimated from the prototype percolation line and drywell test results previously discussed in this report.

6.7.1 Percolation Lines

Percolation lines will be used to dispose of approximately 800,000 gallons per day of treated effluent at the Broderson site. Percolation lines can be designed using methods and protocols similar to those used to design and install leach lines for residential septage disposal systems. Relatively well-drained dune sand deposits were encountered at the Broderson site. Percolation testing and permeability testing performed for the Broderson site indicate that the soils tested had percolation rates of typically less than 1 minute per inch, and a permeability of at least 0.001 cm/second or faster. Prototype testing was also performed at the site to estimate the infiltration capacity of the dune sand, as discussed in Section 3.6.2 of this report. An ultimate infiltration rate of 180 gpd/ft^2 through the wetted surface area of the trench was observed during the prototype testing. It is our opinion that the Broderson site is geotechnically suitable for the proposed disposal of effluent using buried percolation lines.

6.7.1.1 Percolation Trench Design

We recommend that percolation lines be designed using an allowable application rate of 30 gpd/ft^2. A detail summarizing our recommendations for the design of percolation trenches is shown on Plate 13a. The length (L) of individual percolation lines should be limited to 100 lineal feet or less. The bottom of the trenches should be excavated into relatively undisturbed dune sand, and extend to at least 5 feet below the existing ground surface. The trenches should be excavated to a width (W) of at least 3 feet, and provide for at least a 12-inch depth (D) of gravel below a 4-inch exfiltration pipe. The pipe should be laid level and covered with at least 2 inches of gravel. The gravel should be covered with a layer of needle punched geotextile and at least 12 inches of earth. The effective infiltration area of the trench can be estimated as the combined bottom area and one-half of the sidewall area below the pipe. The maximum allowable flow into the trench can then be estimated as 30 gpd/ft^2 x (W x L + ½ B x D), with the trench dimensions in feet. A 10-foot clear spacing should be provided between percolation line trenches.

Gravel for the percolation lines should be 1.5-inch Drain Rock complying with the suggested material specifications of this report. Prior to being placed in the trench, the gravel should be stockpiled at the site, and be sluiced with water to remove fines and dirt from the aggregate.

3.6 PROTOTYPE TESTING FOR EFFLUENT DISPOSAL SYSTEM

3.6.1 Percolation Testing

Percolation testing was performed by Fugro at proposed effluent disposal sites during the period of January 1 through March 25, 2003. The approximate locations of percolation tests and effluent disposal sites are shown on Plate 2c. The results of the laboratory tests performed on soil samples obtained from percolation test locations are presented in Appendix B. The results are generally typical of well-drained, sandy soil with percolation rates predominantly faster than 1 minute per inch. A summary of the field percolation test data is also presented below.

Summary of Percolation Testing for Effluent Disposal Sites

No.	Location	Soil Type	% Fines	Permeability x 0.001 cm/sec H= horizontal	Percolation Rate for 12" squ. Hole (min./in)
P-1	**Santa Maria Avenue**, 72 feet east of 17th Street	Sand (SP)	–	8.4	0.75
P-2	**Santa Maria Avenue**, 140 feet west of 16th Street	Sand (SP)	1	–	0.44
P-3	**Santa Maria Avenue**, 172 feet west of 15th Street	Sand (SP)	–	–	0.43
P-4	**Santa Maria Avenue**, 75 feet east of 13th Street	Sand (SP)	–	–	0.55
P-5	**18th Street**, 85 feet north of El Morro Avenue	Sand (SP)	–	–	0.29
P-6	**18th Street**, 265 feet north of El Morro Avenue	Sand (SP)	0.5	–	0.26
P-7	**18th Street**, 455' north of El Morro Avenue	Sand (SP)	–	10	0.55
P-8	Intersection of **18th Street** and Santa Maria Avenue	Sand (SP)	–	–	0.35
P-9	**South Bay Boulevard,** 65' north of San Ysabel Avenue	Sand (SP)	–	–	1.1
P-10	**South Bay Boulevard**, 350 feet north of San Ysabel Avenue	Sand (SP)	0.5	–	0.22
P-11	**South Bay Boulevard**, 650 feet north of San Ysabel Avenue	Sand (SP)	–	–	0.22
P-12	**South Bay Boulevard**, 950 feet north of San Ysabel Avenue	Sand (SP)	–	5.4	0.32
P-13	**Pismo Avenue**, 110 feet east of 14th Street	Sand (SP)	–	–	0.38

No.	Location	Soil Type	% Fines	Permeability x 0.001 cm/sec H= horizontal	Percolation Rate for 12" squ. Hole (min./in)
P-14	**Pismo Avenue**, 150 feet east of 12th Street	Sand (SP)	1	–	0.39
P-15	**Pismo Avenue**, 85 feet west of 11th Street	Sand (SP)	–	–	0.37
P-16	**Pismo Avenue** foot path, 55 feet east of 8th Street	Sand (SP)	–	9.8	0.44
P-17	**Pine Avenue**, 100 feet south of Rosina Drive	Sand (SP)	0.8	4.4	0.82
P-18	**Pine Avenue**, 390 feet north of Los Osos Valley Road	Sand (SP)	–	–	0.42
P-19	**Pine Avenue**, 250 feet north of Los Osos Valley Road	Sand (SP)	–	–	0.43
P-20	**Pine Avenue**, 45 feet north of Los Osos Valley Road	Sand (SP)	–	–	0.59
P-21	**Santa Ysabel Avenue**, 40 feet east of Scenic Way	Sand (SP)	–	–	0.22
P-22	**Santa Ysabel Avenue**, 170 feet east of Scenic Way	Sand (SP)	–	–	0.29
P-23	**Santa Ysabel Avenue**, 300 feet east of Scenic Way	Sand (SP)	–	8.4	0.42
P-24	**Santa Ysabel Avenue**, 430 feet east of Scenic Way	Sand (SP)	0.9	–	0.35
P-25	Northwest corner of **Broderson site**	Sand (SP)	–	–	0.75
P-26	Southwest corner of **Broderson site**	Sand (SP)	–	3.3	1.5
P-27	Southeast portion of **Broderson site**	Sand (SP)	–	–	0.75
P-28	Northeast corner of **Broderson site**	Sand (SP)	2	–	0.76
L-1	West end of **Prototype Percolation Line at Broderson site**	Sand with silt (SP-SM)	–	6.2	0.63
L-2	Middle of **Prototype Percolation Line at Broderson site**	Sand (SP)	–	6.4	0.73
L-3	East end of **Prototype Percolation Line at Broderson site**	Sand with silt (SP-SM)	2	–	0.76

FROM: GAIL McPHERSON

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3/13/07

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Division 4. Onsite Wastewater Treatment Systems

Subdivision 1. General Requirements

CHAPTER 7. ONSITE WASTEWATER TREATMENT SYSTEMS (OWTS)

ARTICLE 1. GENERAL PROVISIONS

§24900. SWRCB – General Definitions.

Except as otherwise indicated in this Article, definitions of terms used in the SWRCB-promulgated portions of this Chapter shall be those set forth in Division 7 (commencing with Section 13000) of the Water Code and Chapter 6.5 of Division 20 of the Health and Safety Code (commencing with Section 25100).

"**At-grade system**" means an OWTS dispersal system with a discharge point located at the preconstruction grade (ground surface elevation). The discharge from an at-grade system is always subsurface.

"**Basin plan**" means the same as "water quality control plan" as defined in Division 7 (commencing with Section 13000) of the Water Code. Basin plans are adopted by each Regional Water Board, approved by the SWRCB and the Office of Administrative Law, and identify surface water and groundwater bodies within each Region's boundaries and establish, for each, its respective beneficial uses and water quality objectives. Copies are available from the Regional Water Boards.

"**Bedrock**" means the rock, usually solid, that underlies soil or other unconsolidated, surficial material.

"**Certification**" means an expression of professional opinion in the form of a certificate, stamp, or signature that the OWTS, or its components, meets industry standards that are the subject of the certification, but does not constitute a warranty or guarantee, either express or implied. For proprietary supplemental treatment systems, certification is a statement that indicates the subject system has demonstrated performance through an independent, third-party evaluation of performance data as required in §24913(e), but does not constitute a warranty or guarantee, either express or implied.

"**Cesspool**" means an excavation in the ground receiving wastewater, designed to retain the organic matter and solids, while allowing the liquids to seep into the soil. Cesspools differ from seepage pits because cesspool systems do not have septic tanks.

"**Clay**" means a soil particle; the term also refers to a type of soil texture. As a soil particle, clay consists of individual rock or mineral particles in soils having diameters <0.002 mm in diameter. As a soil texture, clay is the soil material that is comprised as 40 percent or more clay particles and not more than 45 percent sand and not more than 40 percent silt particles.

"**Community water supply**" means a public water system regulated by the California Department of Health Services or a local health department.

"**Conventional system**" means an OWTS consisting of a septic tank and a subsurface system for dispersal of septic tank effluent. A gravity subsurface dispersal system may be a leachfield or seepage pit. A conventional system may include septic tank effluent pumping where the dispersal area is located at a higher elevation than the associated septic tank or to accomplish uniform distribution. Properly sited, designed, installed and operated conventional systems are capable of nearly complete removal of suspended solids, biodegradable organic compounds and fecal coliform bacteria. However, other pollutants may not be removed to acceptable levels. Conventional systems can be expected to remove no more than 10 to 40% of the total nitrogen compounds (TN) in domestic wastewater after final soil treatment.

"**Dispersal system**" means a leachfield, seepage pit, mound, at-grade, subsurface drip field, evapotranspiration and infiltration bed, or other type of system for final wastewater treatment and subsurface discharge.

"**Domestic wastewater**" means the type of wastewater normally discharged from or similar to that discharged from plumbing fixtures, appliances and other household devices including, but not limited to toilets, bathtubs, showers, laundry facilities, dishwashing facilities, and garbage disposals. Domestic wastewater does not include wastewater from industrial processes other than inputs considered *de minimis* (less than 5 percent).

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"Domestic well" means a groundwater well that provides water for human consumption and is not regulated by the California Department of Health Services.

"**Dosing tank**" means a watertight receptacle located between an OWTS treatment unit (i.e. septic tank or supplemental treatment unit) and a dispersal area equipped with an automatic siphon device or pump designed to discharge wastewater intermittently in the distribution lines in amounts proportioned to the capacity of such lines and to provide adequate rest periods between such discharges.

"**Earthen material**" means a substance composed of the earth's crust (i.e. soil and rock).

"**EDF**" see "electronic deliverable format."

"**Effluent**" means the wastewater discharged from an OWTS treatment component or any portion thereof.

"**Electronic deliverable format**" or "**EDF**" means the data standard adopted by the SWRCB for submittal of groundwater quality monitoring data to the SWRCB's internet-accessible database system."**Engineered Fill**" means soil that meets the criteria in Table 3 in §24914 and that is designed and constructed to assist in treatment and drainage of OWTS effluent. Engineered fill systems are not the same as "mound systems."

"**ETI**" see "Evapotranspiration and infiltration bed."

"**Evapotranspiration and infiltration (ETI) bed**" means a subsurface dispersal bed in which soil capillarity and root uptake help to disperse the effluent from a septic tank or supplemental treatment system through surface evaporation, soil absorption, and plant transpiration.

"**Existing OWTS**" means an OWTS that was either permitted by the applicable local agency or legally installed before the effective date of this Chapter.

"**Fecal coliform bacteria**" are indicator bacteria common to the digestive systems of warm-blooded animals that are cultured in standard tests to indicate either contamination from wastewater or the level of disinfection.

"**Fines**" are soil particles with a diameter less than 0.05 millimeters. Fines consist of silt- or clay-sized particles.

"Gravel-less chamber" system means a buried structure used to create an aggregate-free absorption area for infiltration and treatment of wastewater.

"**Grease interceptor**" means a passive interceptor that has a rate of flow exceeding 50 gallons-per-minute and that is located outside a building. Grease interceptors are used for separating and collecting grease from wastewater.

"**Groundwater**" means water below the land surface that is at or above atmospheric pressure.

"**High-strength waste**" means wastewater from an establishment (e.g. restaurant, other food service), home, or business (e.g. brewery) having a 24-hour average concentration of biochemical oxygen demand (BOD) greater than 300 milligrams-per-liter (mg/L) or of total suspended solids (TSS) greater than 300 mg/L.

"**Major repair**" means any repair required for an OWTS constructed after the effective date of this Chapter due to surfacing wastewater effluent or, for OWTS with supplemental treatment where the effluent concentration exceeds the requirements contained in §24913(b), §24913(c), or §24913(d).

"**Memorandum of understanding**" (MOU) means a formal agreement between the Regional Water Board and a local agency. The agreement authorizes the local agency to administer the OWTS discharge program in lieu of direct State regulation of discharges from OWTS.

"**Mottling**" means a soil condition that results from oxidizing or reducing conditions due to soil moisture changes from saturated conditions to unsaturated conditions over time. Mottling is characterized by spots or blotches of different colors or shades of color (grays and reds) interspersed within the dominant color as described by the United States Department of Agriculture soil classification system. This soil condition can be indicative of historic seasonal high groundwater level.

"**MOU**" please see "Memorandum of understanding."

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"**Mound system**" means an aboveground dispersal system (covered sand bed with effluent leachfield elevated above original ground surface inside) used to enhance soil treatment, dispersal, and absorption of effluent discharged from an OWTS treatment unit such as a septic tank. Mound systems have a subsurface discharge and specific design parameters.

"**New Lot**" means a lot recorded after the effective date of this Chapter.

"**New OWTS**" means an OWTS permitted after the effective date of this Chapter.

"**Onsite wastewater treatment system(s)**" (**OWTS**) has the same meaning as found in §13290 of the California Water Code. The short form of the term may be singular or plural.

"**Percolation test**" means a method of testing water absorption of the soil. The test is conducted with clean water and test results can be used to establish the dispersal system design.

"**Performance requirements**" means the maximum allowable concentrations of BOD, TSS, total nitrogen (TN), and total coliform resulting from the active treatment of domestic wastewater from an OWTS.

"**Permit**" means a document that allows the installation and use of an OWTS. The term refers to any one of the following:

1. A conditional waiver of waste discharge requirements issued by a Regional Water Board;
2. Waste discharge requirements issued by a Regional Water Board or the SWRCB; or
3. A document, so named, issued by a local agency that is operating under an MOU or other agreement with a regional water board or SWRCB pursuant to these regulations.

"**Person**" means any individual, firm, association, organization, partnership, business trust, corporation, company, or unit of local government who is, or that is, subject to this Chapter.

"**Pollutant**" means any substance that pollutes water and may potentially affect the beneficial uses of water, as listed in a basin plan.

"**Pressure distribution**" means a type of dispersal system employing a pump or automatic siphon and distribution piping with small diameter perforations (1/4 of an inch of less) or drip emitters to introduce effluent into the soil with uniform distribution.

"**Qualified professional**" means an individual who possesses a registered environmental health specialist certificate or is currently licensed as a professional engineer or professional geologist.

"**Record Plan**" means the document prepared by either a qualified professional or person authorized to install OWTS pursuant to §24910(h). Record plans detail the "as-built" installation of the OWTS, including but not limited to final placement of an OWTS its components, sizes and the specifications of components.

"**Replaced OWTS**" means an OWTS that has its treatment capacity expanded, or its dispersal system replaced, after the effective date of this Chapter .

"**Rock**" means any naturally formed aggregate of one or more minerals (e.g., granite, shale, marble); or a body of undifferentiated mineral matter (e.g. obsidian), or of solid organic matter (e.g., coal) that is greater than 0.08 inches (2mm) in size.

"**Sand**" means a soil particle; this term also refers to a type of soil texture. As a soil particle, sand consists of individual rock or mineral particles in soils having diameters ranging from 0.05 to 2.0 millimeters in diameter. As a soil texture, sand is the soil material that is comprised as 85 percent or more sand particles and the percentage of silt plus 1.5 times the percentage of clay particles is less than 15 percent.

"**Seepage pit**" means a drilled or dug excavation, three to six feet in diameter, either lined or gravel filled, that receives the effluent discharge from a septic tank or other OWTS treatment unit for dispersal.

"**Septic tank**" means a watertight, covered receptacle designed for primary treatment of wastewater and constructed to:

1. Receive wastewater discharged from a building;
2. Separate settleable and floating solids from the liquid;

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3. Digest organic matter by anaerobic bacterial action;
4. Store digested solids; and
5. Clarify wastewater for further treatment with final subsurface discharge.

"**Septic tank effluent**" means wastewater discharged from a septic tank.

"**Service provider**" means a person capable of operating, monitoring, and maintaining an OWTS consistent with the requirements and responsibilities in §24910(k), §24913(g), §24913(h), §24914(f), and the O&M manual or capable of inspecting a septic tank in accordance with §24910(v) of this Chapter.

"**Shallow dispersal system**" means a dispersal system designed to apply wastewater at the upper layer of the soil column using pressure distribution.

"**Silt**" means a soil particle; this term also refers to a type of soil texture. As a soil particle, silt consists of individual rock or mineral particles in soils having diameters ranging from between 0.05 and 0.002 mm in diameter. As a soil texture, silt is the soil material that is comprised as approximately 80 percent or more silt particles and not more than 12 percent clay particles.

"**Site**" means the location of the OWTS and, where applicable, a reserve dispersal area capable of disposing 100 percent of the design flow from all sources the OWTS is intended to serve.

"**Site Evaluation**" means an assessment of the characteristics of the site sufficient to determine its suitability for an OWTS to meet the requirements of this Chapter.

"**Soil**" means the naturally occurring body of porous mineral and organic materials on the land surface, and is composed of unconsolidated materials, including sand-sized, silt-sized, and clay-sized particles mixed with varying amounts of larger fragments and organic material. The various combinations of particles differentiate specific soil textures identified in the soil textural triangle developed by the United States Department of Agriculture (USDA) as found in Soil Survey Staff, USDA; **Soil Survey Manual, Handbook 18,** U.S. Government Printing Office, Washington, DC, 1993, p. 138.. For the purposes of this chapter, soil shall contain earthen material of particles smaller than 0.08 inches (2 mm) in size.

"**Soil permeability**" means a measure of the ability of a soil to transmit liquids.

"**Soil texture**" means the soil class that describes the relative amount of sand, clay, silt and combinations thereof as defined by the classes of the soil textural triangle developed by the USDA (referenced above).

"**Supplemental treatment** " means any OWTS or component of an OWTS, except a septic tank or dosing tank that performs additional wastewater treatment so that the effluent meets the performance requirements of §24913 prior to discharge of effluent into the dispersal field. .

"**Telemetric**" means the ability to automatically measure and transmit OWTS data by wire, radio, or other means..

"**Total coliform**" means a group of bacteria consisting of several *genera* belonging to the family *Enterobacteriaceae*, which includes fecal coliform bacteria.

"**Waste discharge requirement**" means an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code.

Authority Cited: CA Water Code § 13291, § 1058.

Reference: CA Water Code § 13291(b).

§24901. SWRCB -- Applicability and General Requirements.

(a) Minimum requirements for the permitting, monitoring, and operation of OWTS for preventing conditions of pollution and nuisance are established in this Chapter. Regional Water Boards and local agencies implementing the OWTS

regulations retain the option of establishing requirements for OWTS that are more protective of water quality than the requirements contained in this Chapter.

(b) This Chapter applies to all new OWTS and to all existing OWTS, although this Chapter addresses these two groups of OWTS in different ways.

(c) No person shall do any of the following without first notifying the Regional Water Board:

(1) operate either a new OWTS or an OWTS that has been relocated, expanded, repaired or replaced with the capacity to treat over 5,000 gallons-per-day.

(2) increase the average pollutant loading of the waste stream going into an OWTS with the capacity to treat over 5,000 gallons-per-day.

(3) change the type (e.g., from domestic to commercial) of the waste stream entering an OWTS.

(4) discharge wastewater above the design flow into an OWTS.

(d) New OWTS and replaced OWTS shall be operated and maintained to perform as designed.

(e) This Chapter shall be implemented through conditional waivers of WDRs by the SWRCB or Regional Water Boards.

(f) OWTS regulated by WDRs may be exempted from the requirements of this Chapter by Regional Water Boards.

(g) A local agency may implement this Chapter, or a portion thereof, as authorized by the SWRCB or by a Regional Water Board through agreement, adopted resolution, or Memorandum of Understanding (MOU). Any MOU, adopted resolution, or similar agreement must require adherence to these regulations and the applicable Regional Water Board basin plan.

Authority Cited: CA Water Code §1058, 13291

Reference: CA Water Code §13291(d), 13291(e)

§24910. SWRCB -- General Requirements.

(a) New OWTS and replaced OWTS shall be operated to accept and treat flows of domestic wastewater, excluding any material not generally associated with household activities (e.g., toilet flushing, food preparation, laundry, household cleaning including drain cleaning, and personal hygiene). Additionally, OWTS may be designed and operated to accept other wastewater from facilities that:

(1) exclude hazardous waste, as defined in Title 22 of the California Code of Regulations;

(2) reduce high strength wastewater to below 150 mg/L BOD and 150 mg/L TSS in the septic tank effluent and prior to discharge to the dispersal system; or

(3) use waste segregation practices and systems to reduce pollutant concentrations entering the OWTS to domestic wastewater levels.

(b) New OWTS and replaced OWTS shall be designed to disperse effluent to subsurface soils in a manner that maximizes unsaturated zone treatment and aerobic decomposition of the effluent.

(c) New OWTS shall be designed, operated and maintained to prevent a condition of pollution or nuisance, as defined in the California Water Code.

(d) The design of new OWTS and replaced OWTS shall be based on the expected influent wastewater quality, the wastewater quantity, the characteristics of the site, and the required level of treatment to not adversely affect water quality or endanger public health.

(e) A qualified professional shall perform all necessary soil and site evaluations for all new OWTS and for all existing OWTS where the treatment or dispersal system will be replaced or expanded.

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(f) A qualified professional shall design all new OWTS and existing OWTS where the treatment or dispersal system will be replaced or expanded, unless the new or existing OWTS meet the requirements of ¶g.

(g) A qualified professional employed by a local agency, while acting in that capacity, can review, design, and approve a design for a proposed conventional OWTS in lieu of the requirement of ¶f.

(h) A Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C-42), or Plumbing Contractor (Specialty Class C-36) shall install all new OWTS and replaced OWTS in accordance with California Business and Professions Code Section and Article 3, Division 8, Title 16 of the California Code of Regulations. A property owner may also install his/her own OWTS if the as-built diagram and the installation are inspected at a time when the OWTS is in an open condition (not covered by soil and exposed for inspection) and approved by the Regional Water Board or authorized local agency.

(i) Materials in concentrations that are deleterious and inhibiting to OWTS operations shall not be discharged to an OWTS. Deleterious and inhibition materials include the following:

(1) any biocide, or

(2) all products and matters defined in Chapter 41, Division 4.5, Title 22 in the California Code of Regulations.

(j) The owner of any site on which is located a new OWTS or replaced OWTS shall have an operation and maintenance (O&M) manual prepared by a qualified professional. O&M manuals shall include, at a minimum:

(1) the name, address, telephone number, business and professional license of the OWTS designer;

(2) the name, address, telephone number, business and professional license, where applicable, of the OWTS installer;

(3) the name, address, and telephone number of the service provider that maintains any supplemental treatment system;

(4) the instructions for the proper operation and maintenance and a protocol for an assessment of performance of the OWTS;

(5) the Record Plan with a certification that the dispersal system meets all applicable requirements contained in §24914(a);

(6) the design flow and performance requirements for the OWTS;

(7) a list of types of substances that could inhibit performance if discharged to the OWTS, including those applicable to ¶i; and

(8) a list of substances that could cause a condition of pollution or nuisance if discharged to the OWTS, including but not limited to pharmaceutical drugs and water softener regeneration brines; and

(9) a copy of the SWRCB or Regional Water Board waiver or waste discharge requirements.

(k) Each owner of a new OWTS with supplemental treatment components (see §24913) shall maintain, in addition to maintaining the O&M manual and record plan, a contract with a service provider to ensure that the OWTS is operated, maintained and monitored as designed.

(l) The owner shall retain a Record Plan and an O&M manual for any new or replaced OWTS upon completion of an OWTS installation. Upon the sale of a site, it is the obligation of the owner of the site to provide the buyer, through escrow or otherwise, a complete copy of the O&M manual and record plan for the OWTS at the site.

(m) The owner shall retain all inspection records pertaining to their OWTS for a minimum of five years.

(n) Cesspools shall not be used for new or replaced OWTS.

(o) All new septic tanks, replaced septic tanks, and grease interceptor tanks shall be consistent with the standards contained in Appendix K, of Part 5, Title 24 in the California Code of Regulations.

(p) All new OWTS septic tanks shall meet the following requirements:

(1) Access openings shall have watertight risers and shall be set within 6 inches of finished grade; and

(2) Access openings shall be secured to prevent unauthorized access.

(q) The installation of new prefabricated septic tanks shall be limited to those approved by the International Association of Plumbing and Mechanical Officials (IAPMO) and their installation shall be installed according to the manufacturer's instructions. If IAPMO certified tanks are not available locally, other prefabricated tanks may be allowed only if they comply with subsection (r) below;

(r) New non- prefabricated tanks or prefabricated tanks not certified by IAPMO shall be installed only after the design is stamped and certified by a California registered civil engineer as meeting the general industry standards necessary to comply with these requirements;

(s) New and replaced OWTS septic tanks shall be designed to prevent solids in excess of one-eighth (1/8) inch in diameter from passing to the dispersal system. Septic tanks that use a National Sanitation Foundation/American National Standard Institute (NSF/ANSI) Standard 46 certified septic tank filter at the final point of effluent discharge from the OWTS and prior to the dispersal system shall be deemed to meet this requirement.

(t) OWTS owners with onsite domestic wells on their property must monitor groundwater by sampling and analyzing water from:

(1) a monitoring well down-gradient and within 100 feet of the OWTS dispersal system within 30 days upon the installation of a new OWTS and no less than once every five years thereafter; or

(2) an existing onsite domestic well on the property within 30 days upon the installation of a new OWTS and no less than once every five years thereafter

Groundwater analyses shall be conducted in accordance with ¶u. Existing OWTS and new OWTS installations shall be exempt from this requirement if the facility that the OWTS serves is provided water from a community water supply system.

(u) The owner or owner's authorized representative shall collect groundwater samples pursuant to ¶(t) and shall have them analyzed by a laboratory certified by the California Department of Health Services. The laboratory shall be capable of producing laboratory results in EDF format. The groundwater samples shall be analyzed for the following: calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), iron (Fe), manganese (Mn), zinc (Zn), sulfate (SO_4), chloride (Cl), Nitrate (NO_3), nitrite (NO_2), fluoride (F), TDS, total alkalinity (as $CaCO_3$), carbonate (CO_3), bicarbonate (HCO_3), MBAS, pH and total coliforms. If a sample tests positive for total coliforms, the sample shall be analyzed for fecal coliform bacteria. The name of the site owner, the site address and the laboratory results shall be transmitted to the SWRCB in EDF format. The names and addresses of owners of tested domestic wells shall not be released.

(v) Any person owning a septic tank shall have a service provider inspect the septic tank a minimum of once every five years to ensure that the level of settleable solids and/or floatable solids do not impair the performance of the septic tank. It is recommended that septic tanks be pumped if the sum of the scum depth and sludge depth exceeds 25% of the septic tank depth as measured from the water line to the bottom of the tank.

(w) The SWRCB recommends that the regenerating saline backwash from water softeners not be discharged either to the OWTS or to the ground in any manner.

(x) All owners of any OWTS requiring a major repair shall correct the malfunctioning OWTS within 90-days of the date that the malfunction was discovered. The Regional Board may exempt a property from the 90-days requirement and extend the time frame, but such exemptions shall not be greater than 180 days.

Authority Cited: CA Water Code §1058, 13291

Reference: CA Water Code §13291(d), 13291(e)

ARTICLE 2. GROUNDWATER LEVEL DETERMINATIONS FOR NEW OWTS

§24912 SWRCB -- Groundwater Level Monitoring

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(a) Unless the seasonal high groundwater level at the site is known to be greater than 10 feet below the ground surface, based on local knowledge of groundwater conditions with the relevant source cited (e.g. previous evaluations and studies, well driller information), a site evaluation conducted by a qualified professional to establish the depth to the seasonal high groundwater shall be performed. Soil mottling observed during the site evaluation by a qualified professional may be used to determine the seasonal high groundwater level. Where soil mottling observations cannot be made or lead to unreliable conclusions, a qualified professional shall use the following protocols to determine seasonal high groundwater prior to design and installation of an OWTS:

(1) To measure depth to seasonal high groundwater, a groundwater level monitoring well shall be installed to a minimum depth of ten feet in the vicinity of a proposed wastewater dispersal system. If an impermeable layer is present at a depth of less than ten feet below the ground surface, the depth of the groundwater level-monitoring well shall be decreased to the depth of the impermeable layer.

(2) For OWTS serving facilities other than single family homes, the Regional Water Board shall determine the number and depth of groundwater level monitoring wells. Such determinations by the Regional Water Board shall supercede the depth requirements in §24912(a)(1).

(3) Measurements of depth to seasonal high groundwater shall be conducted from November 1, to April 1 unless otherwise specified by the Regional Water Board. Groundwater levels shall be measured continuously using a piezometer to record the seasonal high groundwater level. The piezometer may be a float device that mechanically or electrically records the highest water level.

(4) For areas that are subject to special circumstances such as seasonal high groundwater caused by snowmelt or irrigation, measurements to determine the annual high groundwater level shall be conducted during a period specified by the Regional Water Board. Groundwater levels shall be measured continuously using a piezometer to record the seasonal high groundwater level. The piezometer may be a float device that mechanically or electrically records the highest water level.

(5) The Regional Water Board may exempt sites or areas from this Section where an alternative protocol for determining seasonal high ground water is established in the basin plan.

Authority Cited: CA Water Code **§1058, 13291**

Reference: CA Water Code §13260, 13264, 13267, 13269, and 13291

ARTICLE 3 PERFORMANCE REQUIREMENTS AND SPECIFICATIONS

§24913. SWRCB -- Performance Requirements for Supplemental Treatment Components

(a) Local agencies or the Regional Water Board may require supplemental treatment systems where treatment is needed to mitigate for insufficient soil depths, as required in §24914(c) for a conventional system or 24914(d), or to provide for protection of the water quality and public health, as deemed necessary.

(b) Supplemental treatment components, other than for disinfection or nitrogen reduction, shall be designed to reduce biochemical oxygen demand (BOD) and total suspended solids (TSS) concentrations. Supplemental treatment components, other than for disinfection or nitrogen reduction, shall produce an effluent that meets the following requirements:

(1) The 30-day average carbonaceous BOD (CBOD) concentration shall not exceed 25 milligrams per liter (mg/L), or alternately, the 30-day average BOD shall not exceed 30 mg/L; and

(2) The 30-day average TSS concentration shall not exceed 30 mg/L;

(c) Supplemental treatment components designed to perform disinfection shall have sufficient pretreatment of the wastewater so that effluent does not exceed a 30-day average TSS of 10 mg/L and shall further achieve an effluent total coliform bacteria concentration, at the 95 percentile, of not greater-than either of the following;

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(1) 10 MPN per 100 milliliters prior to discharge into a dispersal field where the soils exhibit percolation rates between 1 and 10 minutes per inch (MPI) or where the soil texture is sand; or

(2) 1000 MPN per 100 milliliters prior to discharge into a dispersal field where the soils exhibit percolation rates greater than 10 MPI or consist of a soil texture other than sand.

(d) Effluent from supplemental treatment components shall not exceed a 30-day average TN concentration of 10 mg/L as nitrogen.

(e) Before the installation of any proprietary supplemental treatment OWTS, all such treatment components shall be tested by an independent third party testing laboratory. The independent third party laboratory shall certify that the type of system being installed and its components are capable of reliably meeting the performance requirements when installed according to manufacturer specifications, as applicable, based upon the results from the testing protocol. The testing protocol shall include but not be limited to ¶1 thru ¶5 below:

(1) a testing duration of not less than six continuous months.

(2) the wastewater used for testing shall consist primarily of municipal or domestic wastewater and shall have concentrations in the following ranges:

(A) BOD: 125 to 300 milligrams per liter;

(B) TSS: 125 to 300 milligrams per liter;

(C) TN (as N): 50 to 75 milligrams per liter,

(D) total coliform bacteria: $1X10^6$ to $1X10^8$ MPN/100 ml, and

(E) alkalinity (as $CaCO_3$): 50 to 200 milligrams per liter.

(3) hydraulic and organic design loading shall be varied during the test to simulate OWTS operational stress at different levels of use, including all of the following:

(A) regular daily use, where the following daily wastewater flow regime entering the supplemental treatment system is as follows:

i. approximately 35% of the daily wastewater design flow enters the OWTS from 6:00 a.m. to 9:00 a.m.

ii. approximately 25% of the daily wastewater design flow enters the OWTS from 11:00 a.m. to 2:00 p.m.

iii. approximately 40% of the daily wastewater design flow enters the OWTS from 5:00 p.m. to 8:00 p.m.

(B) working parent use, where the following 5-day wastewater flow regime entering the supplemental treatment system is as follows:

i. approximately 40% of the daily wastewater design flow enters the OWTS from 6:00 a.m. to 9:00 a.m.

ii. approximately 60% of the daily wastewater design flow enters the OWTS from 5:00 p.m. to 8:00 p.m.

(C) wash-day use, where following a 5-day regular daily use flow regime provides additional wastewater from a clothes washing machine during the first, third and fifth days. Additional clothes washing water shall have a minimum of 3 wash cycles (including 6 rinse cycles) interspersed between 6:00 a.m. to 2:00 p.m. per 500 gallons of design flow..

(D) vacation (e.g., one week rest).

(4) testing of supplemental treatment components to comply with the performance requirements of ¶b, ¶c or ¶d shall be conducted with the following detection limits listed in Table 1:

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Table 1: Detection Limits for Wastewater Constituents	
Parameter	Detection Limit
BOD	2 mg/L
TSS	5 mg/L
Total Coliform	2.2 MPN
Total Nitrogen	1 mg/L

(f) The ongoing monitoring of supplemental treatment components designed to meet the performance requirements of ¶b ¶c or ¶d shall be monitored in accordance with the operation and maintenance manual for the OWTS or more frequently as required by the Regional Water Board.

(g) OWTS with supplemental treatment components shall be equipped with visual or audible alarm as well as a telemetric alarm that alerts the owner and service provider in the event of system malfunction. OWTS using supplemental treatment shall, at a minimum, provide for 24-hour wastewater storage based on design flow as a means to minimize pollution from overflow discharge after a system malfunction or power outage.

(h) OWTS designed to meet the disinfection performance requirements outlined in §24913(c) shall be inspected for proper operation weekly by a service provider unless a telemetric monitoring system is capable of continuously assessing the operation of the disinfection system. Testing of effluent from supplemental treatment components that perform disinfection shall be conducted quarterly based on analysis of total coliform with a minimum detection limit of 2.2 MPN. Effluent samples shall be taken by a service provider and analyzed by a California Department of Health Services certified laboratory.

Authority Cited: CWC 1058, 13291.

Reference: CA Water Code §13260, 13264, 13267, 13269, and 13291

§24914. SWRCB -- Dispersal Systems

Any dispersal system that is part of a new OWTS shall meet the following requirements:

(a) Dispersal systems shall be designed and installed at the shallowest practicable depth to maximize elements critical to effective treatment of effluent in the soil. Elements critical to effective treatment include oxygen transfer, biological treatment, evapotranspiration and vegetative uptake of nutrients.

(b) Dispersal systems, except those addressed in §24914(g) and §24914(i), shall be designed using only the bottom area of the dispersal system as the infiltrative surface. The infiltrative surface shall be sized using the design application rates contained in either Table 2 or Figure 1.

(c) Dispersal systems of all conventional OWTS shall be consistent with groundwater separation requirements specified in Appendix K, of Part 5, Title 24 in the California Code of Regulations and have at all times during operation at least three feet of continuous unsaturated, undisturbed, earthen material with less than 30 percent of that material by weight containing mineral particles in excess of 0.08 inches (2 mm) in size (i.e. rock) between the bottom of the dispersal system and top of the seasonal high groundwater level, impermeable strata, or bedrock, whichever of these three, if present, has the highest elevation. Where greater than 30 percent of the undisturbed earthen material exceeds 0.08 inches (2 mm) in size, pressure distribution shall be used to disperse the OWTS effluent and either of the following shall apply:

(1) the minimum depth of undisturbed earthen material required shall be determined using Figure 2; or

(2) the application rate as shown in Table 2 or Figure 1 shall be reduced by the same percentage as that of the earthen materials in excess of 0.08 inches (2 mm) at the dispersal area.

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(d) Dispersal systems of all OWTS with supplemental treatment components shall be consistent with groundwater separation requirements specified in Appendix K, of Part 5, Title 24 in the California Code of Regulations and have at all times during operation at least two feet of continuous unsaturated, undisturbed, earthen material with less than 30 percent of that material consisting of mineral particles in excess of 0.08 inches (2 mm) in size (i.e. rock) between the bottom of the dispersal system and top of the seasonal high groundwater level, impermeable strata, or bedrock whichever of these three, if present, has the highest elevation. Where greater than 30 percent of the undisturbed earthen material exceeds 0.08 inches (2 mm) in size, pressure distribution shall be used to disperse the OWTS effluent and either of the following shall apply:

(1) the minimum depth of undisturbed earthen material required shall be determined using Figure 2; or

(2) the application rate as shown in Table 2 or Figure 1 shall be reduced by the same percentage as that of the earthen materials in excess of 0.08 inches (2 mm) at the dispersal area.

(e) Where undisturbed earthen material has insufficient depth to satisfy the minimum depth requirements in ¶c or ¶d, engineered fill as defined herein may be added to existing site soils so that the site exceeds the specified soil depth requirements in ¶c and ¶d. Engineered fill (i.e. sand or crushed glass) shall meet the specifications contained in Table 3. Engineered fill shall compensate for the lack of in-place earthen material at a 1.5 to 1 basis so that a one foot deficiency in the soil column depth would require one and one half feet of engineered fill material. A pressure distribution system is required where engineered fill is used to comply with the minimum earthen material depth requirements. In no case shall engineered fill compensate for more than one foot of the minimum native soil depth requirements in ¶c or ¶d.

(f) Conventional OWTS dispersal systems in which pumps are used to move effluent from the septic tank to the dispersal system shall be equipped with one of the following: a visual, audible, or telemetric alarm that alerts the owner or service provider in the event of pump failure. All pump systems shall, at a minimum, provide for storage in the pump chamber during a 24-hour power outage or pump failure and shall not allow an emergency overflow discharge.

(g) Gravel-less chambers shall meet the requirements for all dispersal systems as contained in ¶c and ¶d. The infiltrative surface shall be sized in a manner consistent with Appendix K, of Part 5, Title 24 in the California Code of Regulations and shall use the design application rates contained in either Table 2 or Figure 1 of this Chapter.

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Table 2: Design Infiltrative Surface Application Rates	
USDA Soil Texture Classification	Maximum Wastewater Application Rate (gallons per day per square foot)
Coarse Sand with percolation rate less than 1 MPI	Prohibited
Coarse sand, medium sand	1.2
Fine sand, loamy sand	1.1 to 0.8
Sandy loam, loam, sandy clay loam	0.7 to 0.6
Silt loam	0.5 to 0.4
clay loam, silty clay loam, sandy clay	0.3 to 0.2

Table 3: Engineered Fill Specifications	
1. Maximum percentage of particles smaller than 0.053 mm in diameter (sieve #270).	Dry Weight % Passing 5%
2. Maximum percentage of particles over 2.0 mm in diameter.	Dry Weight % Passing 20%
3. Sieve Size	Dry Weight % Passing
3/8	100
4	95-100
10	75-100
16	50-85
30	25-60
50	10-30
100	2-16
200	0-3

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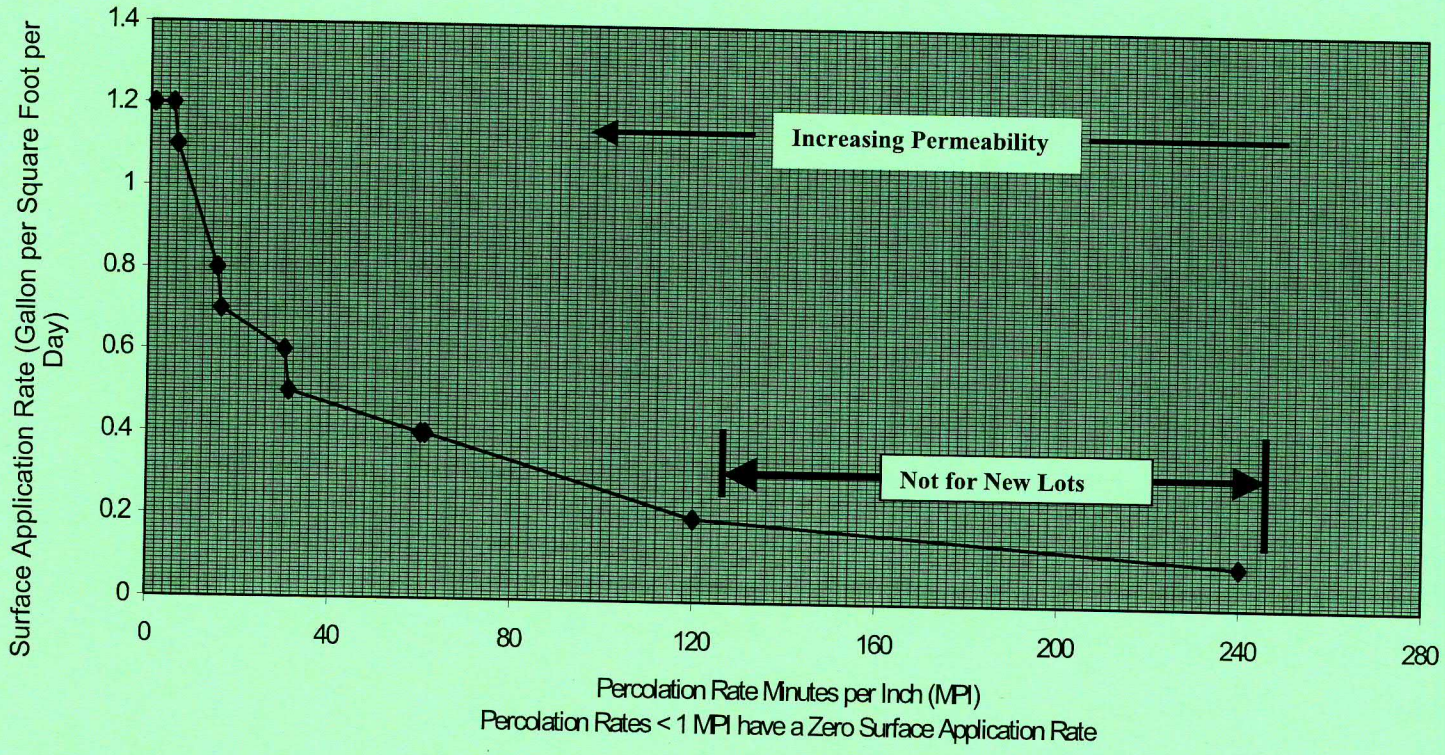
Figure 1 : Design Infiltrative Surface Application Rates



Note: Application rates with a percolation rates higher than 120 are restricted to existing parcels.

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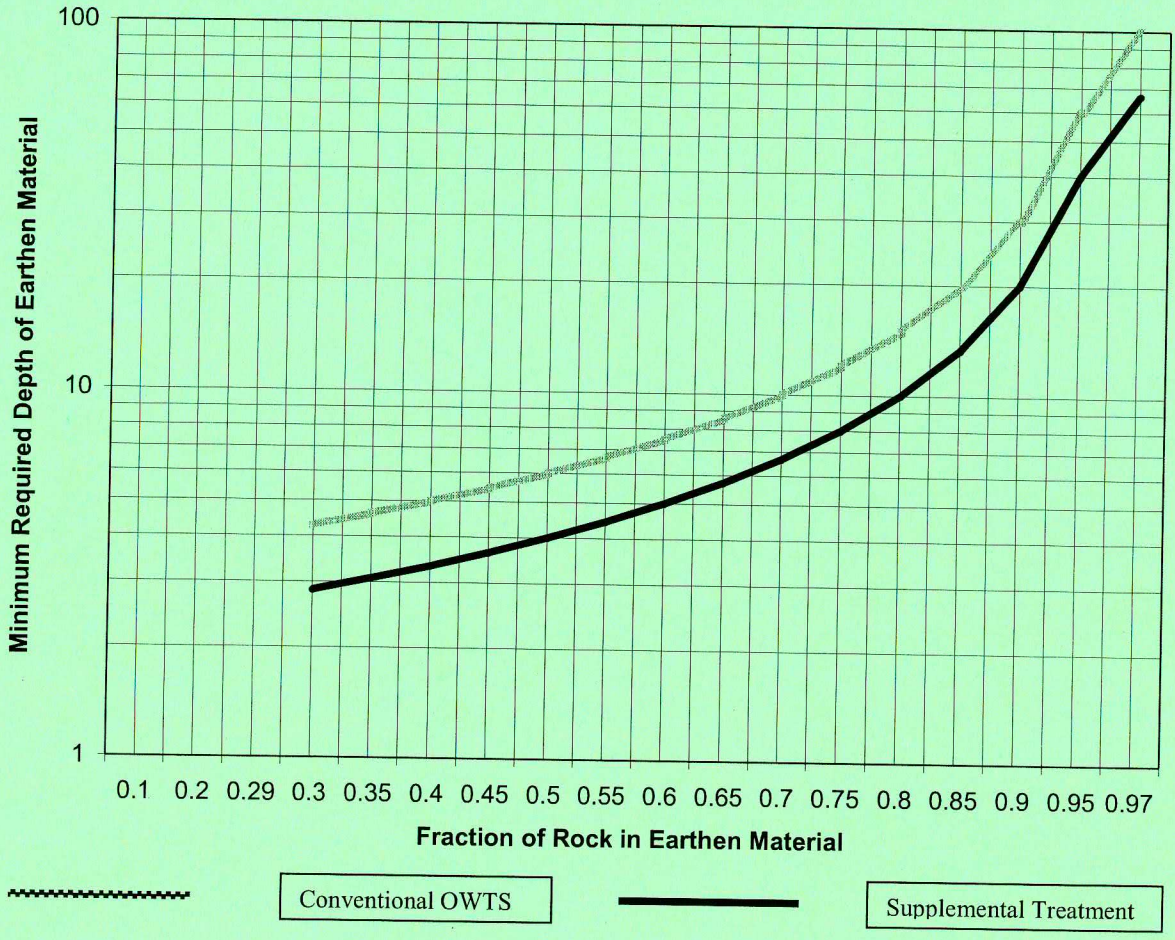
Figure 2: Minimum Depth of Earthen Material



(h) Dispersal systems using shallow pressurized drip or orifice dispersal shall meet the following requirements:

(1) The allowed application area shall not exceed one square foot per emitter/orifice. In no case are application areas allowed to be overlapping or less than one square foot per lineal foot; and

(2) all systems shall be designed and maintained to reduce orifice clogging and root intrusion.

(i) Seepage Pits shall be designed on sidewall area as the infiltrative surface and are allowed where the following conditions apply:

(1) the site has been determined by a qualified professional to be unsuitable for other types of dispersal systems due to soil properties or amount of area available at the site;

(2) the bottom of the seepage pit shall be a minimum of ten feet above seasonal high groundwater level; and

(3) the site shall meet one of the conditions:

(A) There must be a minimum of ten feet of soil below the bottom of the seepage pit and above the seasonal high groundwater level, impervious layer, or bedrock. All strata to a depth of 10 feet below the pit bottom must be free of groundwater in accordance with §24912, or

(B) When an OWTS has supplemental treatment components designed to meet the performance requirements specified in §24913(b), and §24913(c) are met, a seepage pit may have less than 10 feet of soil below the bottom of the seepage pit, but no less than two feet of soil, or

(C) When an OWTS has supplemental treatment components designed to meet the performance requirements specified in §24913(b) and §24913(c)(1), a seepage pit may have less than two feet of soil beneath the bottom of the seepage pit.

(j) Evapotranspiration and infiltration (ETI) systems shall be designed such that evapotranspiration and infiltration exceed the design waste flow combined with a 25-yr return rate precipitation event on an annual, monthly and seasonal basis. ETI systems shall be operated in a manner that prevents human exposure to wastewater.

Authority Cited: CA Water Code §1058, 13291

Reference: CA Water Code §13260, 13264, 13267, 13269, and 13291

ARTICLE 4: PROTECTING IMPAIRED SURFACE WATER

§24940. SWRCB -- Applicability and Requirements.

This section shall apply to any water body that has been designated as impaired due to nitrogen or pathogens pursuant to Section 303(d) of the Clean Water Act but only where a TMDL has been approved that includes a determination that OWTS contribute to the impairment of the water body.

(a) No new OWTS dispersal area shall be constructed or operated within 600 linear feet [in the horizontal (map) direction] of the water body unless one of the following applies:

(1) where the waterbody is listed as impaired due to nitrogen, OWTS meets the performance requirements for supplemental treatment contained in §24913(b) and §24913(d).

(2) where the water body is listed as impaired due to pathogens, OWTS meets the performance requirements for supplemental treatment contained in §24913(b)(1) and §24913(c).

(b) Unless modified or exempted pursuant to ¶c, ¶d, or ¶e, an owner of any existing OWTS dispersal area within 600 linear feet [in the horizontal (map) direction] of the water body shall have the OWTS inspected by a qualified professional within one year of the effective date of these regulations or within one year after the effective date of a TMDL that includes a determination that OWTS contribute to impairment of the water body, whichever is later.

(1) The inspection shall include but not be limited to:

(A) a determination of whether the OWTS is discharging to the surface;

(B) a determination of whether the OWTS complies with the depth to seasonal high groundwater requirements of this Chapter, unless the OWTS owner chooses to assume that the OWTS is contributing to the impairment;

(C) for a water body impaired for pathogens, a determination of whether fecal coliform in the OWTS discharge is reaching groundwater, unless the OWTS owner chooses to assume that the OWTS is contributing to the impairment; and

(D) for a water body impaired for nitrogen, a determination of whether nitrogen exceeding 10 mg/l is reaching groundwater, unless the OWTS owner chooses to assume that the OWTS is contributing to the impairment.

(2) The OWTS owner shall send a report of the inspection to the Regional Water Board within 30 calendar days of the completion of the inspection.

(3) Where a determination is made by a qualified professional that an OWTS discharge of fecal coliform or nitrogen exceeding 10 mg/l is reaching groundwater, the owner of the OWTS shall have four years following the date of the determination to meet the applicable requirements of ¶a.

(c) Adoption or amendment of a TMDL may alter the 600-foot distance requirement or compliance dates in ¶a and ¶b.

(d) This Section does not apply to impaired waters where, prior to the effective date of this Chapter, the Regional Water Board has adopted a TMDL requiring implementation of a wastewater management plan. The wastewater management plan must include methods to reduce the OWTS pollutant contribution to the impaired water body, a plan for water quality monitoring, and a program for the repair or replacement of existing OWTS. The wastewater management plan must be designed to result in either elimination of the impairment or the reduction of the contribution of OWTS to the impairment.

(e) The requirements contained in this Section do not apply to OWTS owners who commit by way of a legally binding document to connect to a centralized wastewater collection and treatment system regulated through WDRs within nine years. To become effective, the owner must sign the document within forty-eight months of the effective date of this Chapter or the effective date of a TMDL, whichever is later. The specified date for the connection to the centralized community wastewater collection and treatment system shall not extend beyond nine years following a Regional Water Board determination made pursuant to this Section.

§24940 to §25500 [Reserved for SWRCB]

FROM: THOMAS RUEHR

May 12, 2008

My name is Tom Ruehr and I live within one block of this building. I have served on the Los Osos Nitrate TAC and the Waste Water Alternatives TAC plus I have served on the County Biosolids Taskforce.

The critical issue is treated waste water reuse or disposal.

First, testing at the Broderson site resulted in a water "infiltration" rate of 180 gallons per day per square foot "through the wetted surface of the trench" during prototype testing. This must have included side walls!

Second, the Fugro West 2004 study recommended using a maximum application rate value of 30 gallons of treated waste water per day per square foot. Whereas, the previous sewer project in 2001 determined an recommended rate of 7 gallons of treated waste water per day per square foot.

Third, the Broderson site percolation rate data in 2003 indicate all sites had percolation rates greater than one minute to percolate one inch of treated waste water. Table 2 and Figure 1 of the March 2007 draft law AB 885 says under these conditions, a maximum application rate is 1.2 gallons of treated waste water per day per square foot.

What is the correct value? 180, or 30, or 7 or 1.2?

As a **soil scientist**, I know a sustained water application rate of the lowest rate of 1.2 gallons of waste water per day per square foot can **not** be sustained on the Los Osos dune sands. These sands are permeated with thousands of horizontal pencil thin clay lamellae. These lamellae cause water to move faster horizontally than vertically.

Bottom line is the Broderson site is dead in the water for high rate waste water application **as is every other possible site** any where on the Los Osos dune sheet. This is an **absolute fatal flaw** in the proposed sewer. I made this known in 1992 and the County has tried to cover this up since then.

What must be done?

One: The citizens of Los Osos deserve a thorough explanation of why various engineering firms have chosen these values and why no agreement has been reached after millions of dollars of studies. Comparable values in units of gallons of waste water per day per square foot should be used in all calculations, rather than hiding data by using other units of measurement.

Two: We must have an independent reassessment by an outside unbiased recognized authority to determine the one waste water application rate to use.

Three: This result must be dealt with appropriately in the Environmental Impact Report.

Four: The final proposed sewer project must have an effective and environmentally sound and unified collection, treatment and waste water application system. It must not be segmented with the idea of solving the waste water application system in the future.

This fatal flaw will cause EACH residence of Los Osos to have to pay over 1 million dollars to fix this problem created by the inability of these studies to provide a single unified value.